



## Technical Data Sheet

### Silica Heteropoly Blue Method

**Applications and Industries:** Boiler water, cooling water, natural waters, wastewater, high purity water.  
Not recommended for seawater.

**References:** APHA Standard Methods, 22<sup>nd</sup> ed., Method 4500-SiO<sub>2</sub> D - 1997; USEPA Methods for Chemical Analysis of Water and Wastes, Method 370.1 (1983); ASTM D859-05, Silica in Water

**Chemistry:** Silica reacts with ammonium molybdate under acidic conditions to produce yellow molybdosilicic acid, which is reduced by aminonaphtholsulfonic acid to form heteropoly blue. The resulting blue color is directly proportional to the silica concentration of the sample. Results are expressed as ppm (mg/L) SiO<sub>2</sub>. To convert test results to ppm Si, multiply by 0.467.

#### Interference Information:

This chemistry measures "molybdate reactive silica" which includes dissolved simple silicates, monomeric silica, silicic acid, and an undetermined fraction of polymeric silica.

Citric acid has been added to the reagent to eliminate interference from up to 60 ppm phosphate.

Color development is affected by high salt concentrations; with seawater, the color intensity may be increased by approximately 10-15%.

Sample temperatures should be at or near 20°C; low sample temperatures may cause false low results.

Strong oxidizing agents may interfere in the reduction step, preventing the blue color formation.

Sulfide and high concentrations of iron may interfere.

Glassware may contribute silica.

Ethylene and propylene glycol do not interfere at concentrations up to at least 1%.

To minimize interferences from sample color or turbidity, instrumental test results can be adjusted for a "chemical zero" which is prepared by omitting the addition of ammonium molybdate (A-9001 Activator Solution) to the sample during the test procedure.

**Safety Information:** Safety Data Sheets (SDS) are available upon request and at [www.chemetrics.com](http://www.chemetrics.com). Read SDS before using these products. Breaking the tip of an ampoule in air rather than water may cause the glass ampoule to shatter. Wear safety glasses and protective gloves.

**Available Analysis Systems:** Visual colorimetric: CHEMets® and ULR CHEMets®, Instrumental colorimetric: Vacu-vials®

**Storage Requirements:** Products should be stored in the dark and at room temperature. The CHEMets refill (R-9010) can be refrigerated to extend the shelf life.

**Shelf Life:** *When stored in the dark and at room temperature:* Visual colorimetric: The R-9010 CHEMets refill has an 11-month shelf life; this shelf life can be extended by 18 months if the refill is refrigerated when not in use. The R-9011 ULR CHEMets refill has a 5-month shelf life. The C-9010 color comparator has an 18-month shelf life. The C-9001 and C-9011 color comparators, activator solution, and neutralizer solution have shelf lives of 2 years. Instrumental colorimetric: The Vacu-vials kit has a shelf life of 2 years.

**Accuracy:** CHEMets and ULR CHEMets kits: ± 1 color standard increment;

Vacu-vials kit:

with spectrophotometers: ±10% error at 3.00 ppm, ± 20% error at 1.00 ppm, ± 30% error at 0.25 ppm

with all other CHEMetrics supported platforms: ± 10% error at 7.50 ppm, ± 20% error at 2.50 ppm, ± 30% error at 0.50 ppm